

# METHOD OF PRODUCING LITHIUM ION CATHODE MATERIALS

## ABSTRACT

5           A method of producing  $\text{Li}_y[\text{Ni}_x\text{Co}_{1-2x}\text{Mn}_x]\text{O}_2$  wherein  $0.025 \leq x \leq 0.5$  and  $0.9 \leq y \leq$   
1.3. The method includes mixing  $[\text{Ni}_x\text{Co}_{1-2x}\text{Mn}_x]\text{OH}_2$  with  $\text{LiOH}$  or  $\text{Li}_2\text{CO}_3$  and one or  
both of alkali metal fluorides and boron compounds, preferably one or both of  $\text{LiF}$  and  
 $\text{B}_2\text{O}_3$ . The mixture is heated sufficiently to obtain a composition of  $\text{Li}_y[\text{Ni}_x\text{Co}_{1-2x}\text{Mn}_x]\text{O}_2$   
sufficiently dense for use in a lithium-ion battery cathode. Compositions so densified  
10 exhibit a minimum reversible volumetric energy characterized by the formula  $[1833 -$   
 $333x]$  measured in  $\text{Wh/L}$ .